



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,796	02/06/2004	Vijayen Veerasamy	014089-002580US	8456

23694 7590 09/06/2007
J. NICHOLAS GROSS, ATTORNEY
2030 ADDISON ST.
SUITE 610
BERKELEY, CA 94704

EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
----------	--------------

1762

MAIL DATE	DELIVERY MODE
-----------	---------------

09/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/773,796	Applicant(s) VEERASAMY ET AL.	
	Examiner Marianne L. Padgett	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/18/2007 (1/22/2007 & 4/13/2007).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5, 7-11, 16-35 and 37-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5, 7-11, 16-35 and 37-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1762

1. On page 8 of the 6/18/2007 response (in the remarks), applicants have requested that the PTO-1449 of the IDS submitted 6/1/2006 be provided with initials showing consideration of references, however applicants were provided with exactly what they requested in the mailing of 7/6/2006. If applicants' records are missing this paper, the examiner will be happy to fax them a copy to complete their records. (If the examiner tries to get a previously mailed paper included with a current action, she has no idea what the contractors will do with it).

With respect to the meaning of "subplantation", paragraph [0015] in the specification had already been considered by the examiner **not** to provide a definition & applicants' citation of paragraph [0040] provides no significantly different information or definition. Applicants have named the title of a previously supplied reference that uses the term "subplantation", but have pointed out no particular definition or section therein that they consider to provide a definition & this reference's process also appears to be equivalent to implantation, hence as applicants have neither agreed nor disagree with the examiner's interpretation that ion subplantation is equivalent to ion implantation, the terms are taken to be synonyms as previously discussed.

2. Claims 26-27, 29, 31-35 & 37-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants have substituted "recording media substrate" for the synonymous previously rejected "data recording substrate", hence have only paraphrased the New Matter to an equivalent form, that still encompasses the rejected broadened scope, so as to be inclusive of materials such as paper. As previously discussed in section 3 of the action mailed 7/21/2006 (7/6/2006), see [000 2, 5-12] in the original specification, which refer to **magnetic** recording media, and note that dependent claim 34 does not share this New Matter problem with independent claim 31 & its other dependent claims.

Art Unit: 1762

Applicants have removed a previously rejected terminology of "narrow" from the claim 31 sequence, replacing it with "substantially uniform", while this removes the previous New Matter rejection, applicants have failed to cite support for the present phraseology, which was not found by the examiner to be used in the specification in the **present context**. Note that the original claims did not use this phrasing. It is noted that [0016] discusses a stream of ions having "a uniform weight and the **impact energy** will preferably be substantially uniform" (emphasis added), however a uniform weight is not necessarily the same thing, and frequently may be entirely different from the now claimed "substantially uniform ion weight distribution", which literally means that there is a distribution of weights (i.e. more than one weight & no maximum number of different weights), where the **amount** of each individual weight in the distribution is substantially the same. Support in this context & breath was not found. Similarly, "a substantially uniform ion energy distribution" necessitates there being a distribution of ion energies, where the amount of each ion energy in the distribution is substantially the same. It is noted that paragraphs [0058-61], which references figures 3E & F, especially noting [0060-61] have further discussion concerning ion energy distributions, however all of these are limited in width of the distribution, nor does this disclosure support energies over an unlimited distribution range all being equal, i.e. uniform. Note that in the claim 3 sequence, the energy & weight distributions are all related to the **impact energy**, but the present claim language does not restrict the ion distributions to ions that will be impacting on the substrate & the specification does not teach how to keep those ions included by the present claim language from impinging on the substrate so as to get the presently claimed results, but instead limits what's produced & directed by the process. For these reasons, the phrasings substituted for "narrow" in the claim 31 sequence, also appears to encompass or include New Matter.

With respect to claims 26, 37 & their dependents, what applicants' amended the claims are closer to what is supported by the specification, but as previously discussed (see section 3 of the 7/21/07 mailing, particularly the paragraph bridging pages 3-4), the claims to lack context to give them support, as

Art Unit: 1762

the claimed dominant & nondominant species were only taught & demonstrated in applicants' specification for the specific gas, acetylene, and then only if the particular pressure conditions were met. As applicants' claims continue to lack these limitations & the remarks provide no reason or evidence of other support in the original specification, these claims continue to encompass **New Matter**.

With respect to the "G-peak", claim 39 was amended as stated by applicants (page 7 of response), but claim 29 was amended to read on $190\text{-}1510\text{ cm}^{-1}$, which is again New Matter, as it is inconsistent with the values disclosed in the fourth column of table II. Applicant's attention is also directed to a probable problem in table II, which has 2 columns labeled "G-peak", but the examiner notes that in paragraphs [0101] & [0102] there is discussion of G- & D-peaks, which suggests that there is a problem in the table category labels.

3. The disclosure is objected to because of the following informalities: apparent inconsistencies in the labels for the columns in table II need clarification or correction, being sure to provide support or reasonable explanation for why any amendment is necessitated by the original disclosure, logic &/or known concepts in the art (provide supporting evidence if necessary).

Appropriate correction is required.

Claims 37-38 are objected to because of the following informalities: in these two claims ultimately dependent from claim 3, the phrases "the narrow... distribution" lacks proper antecedent basis, as the term "narrow" was not previously used. It is noted that with respect to the term "narrow" being relative as previously discussed on page 5 of the 7/21/2006 mailing, that these claims 37 & 38 define metes and bounds for the types of carbon ions present & their energy distribution as described by the bias voltage, such that "narrow" is superfluous. Appropriate correction is required.

4. Claims 25, 27, 35 & 38 remain rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1762

These claims remain unclear as previously discussed in section for bridging pages 4-5 of the 7/21/2006 action. To reiterate & paraphrase, to define a property of an ion beam with respect to a voltage which is NOT & has NEVER been required to be used in a process is unclear. Before a bias voltage can have any meaning it all with respect to the process, first it must be employed in the process! As indicated from cited paragraph [0054], the bias voltage is used in connection with a grounded extraction electrode & is taught to be employed to control energy, however nothing in this technique relates to any limitations in the claims as written, so defining any energy distribution with respect to an unused technique can be anything but unclear. The examiner notes that employing a biased substrate (holder) to control on an acceleration is in orbit and well-known practice, hence if they biased substrate were employed it would have been known and recognized to have a correspondence to the ion acceleration, thus impact energy.

5. Claims 30 & 40 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to the claimed "plasmon peak" about >25 eV of claims 30 & 40, applicants' have cited a section of the specification previously cited & reviewed by the examiner. The examiner appreciates the emphasis of [0103], which compares the plasmon-peak value of 34 eV to the density of diamond, however this is only **one point** of comparison. While the examiner might assume that the lower eV values represent a-C:H films less dense than diamond, this is only an assumption, not a fact, nor has she any way of determining (assuming the assumption is correct), how much less dense 25 eV represents in comparison to the structure of diamond (is the relationship with density, linear, logarithmic, or what?), hence how it relates to the density measurements of various DLC films, thus it remains impossible for the examiner to determine how these values compare with densities produced in the prior art deposits, as sufficient information to do so is lacking. Lacking any clearly determinable correspondence or evidence

Art Unit: 1762

to the contrary, any DLC or hard carbon a-C:H may be considered to be expected to provide plasmon values is claimed.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1762

7. Claims 3-5, 16-17, 20, 23-24, 29-30 & 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin et al. (5,616,179), previously discussed in sections 12, 8 & 7 of the actions mailed 3/29/2005, 11/16/2005 & 7/21/06 (7/6/06), respectively.

To reiterate, Baldwin et al. (5,616,179) teach an end-Hall ion source, with a straight path from source to substrate (figures 1 & 2), the teaching therein (some cited by applicant on page 9 of their 6/1/2006 response) on col. 3, line 65-col. 4, line 12 and col. 6, lines 31- 52, indicate that most species emitted by the end-Hall ion source will traverse the distance from the source to the substrate, without making any gas phase collisions involving subsequent energy loss. While it is indicated on col. 6 that **when methane** gas is used, all the ion species are not carbon containing and some H^+ & H_2^+ will be produced, as seen on col. 4, lines 13-23, methane is not the only hydrocarbon contemplated for use by Baldwin et al., **but alternate hydrocarbons**, such as **acetylene** are also contemplated. From Baldwin et al.'s comments, it appears expected that "all the ion current was assumed to be carbon containing" for such alternatives, thus would **inherently have a narrower & more uniform ion species distribution** when using taught gases, such as **acetylene**, due to compositional & energetic considerations. Note that Baldwin et al.'s teachings when discussing most species emitted from their ion source that are arriving at the substrate, are including neutral species, nonionized radicals, etc., as being important to the formation of their a-C:H deposition, however applicants' claims while limiting parameters concerning the ions in the stream from the plasma, do **not exclude** the presence of these neutral species, etc., since they are not ions, but may come from a plasma. While Baldwin et al. indicates that the various neutral species are important in the formation of the deposit, the teachings **also indicate** that the **positive ion hydrocarbon species** are also **important**, hence they must be said to promote the formation of the taught a-C:H deposition (as well as DLC (abstract)), which is the material being deposited. Applicants' claims do not prohibit or exclude other influences from contributing to the formation of the claimed sp^3 C-C bonds, they merely require that "the substantially uniform **impact** energy distribution and the substantially uniform

Art Unit: 1762

weight distributions **promote** formation" thereof (or the like; emphasis added), which the process of Baldwin et al. also unquestionably does. It would appear from the teachings of Baldwin et al. that when hydrocarbons, such as **acetylene**, which can be assumed to **have all ion species being carbon-containing** as taught, that they would **correspond** to a **substantially uniform weight distribution** as claimed and would be affecting, hence promoting formation of sp^3 carbon-carbon bonds. Note: col. 1, line 62-col. 2, line 17 discussing the presence of sp^3 in deposits & col. 2, lines 66-67+ stating "A primary object of the present invention is to provide a process for depositing diamondlike carbon films...", where the examiner takes notice that by definition DLC films will have percentages of sp^3 C-C bonds as claimed.

(Note the mentioned "broad beam" irradiation previously cited by applicants in column 9, is an optionally supplied ion source using $Ar + N_2$, that is not the carbon ion source & used in an alternate mode process, hence is not relevant to the discussion.)

With respect to Baldwin et al.'s important feature of "2. The ranging energy distribution of the hydrocarbon-based positive ions in the beam", this statement does not tell what is meant by "ranging energy distribution", hence must be read in light of the rest of the disclosure in the patent, such as col. 4, line 53 that states "the ion beam energy is **about 100 eV**" (emphasis added), or col. 5, line 17-34 teaching "it is believed that when the **average energy per deposition carbon atom is about 100 eV**, then hard, substantially optical transparent electrically resistive and non-electron-emissive a-C:H is produced. When the average energy per deposited carbon atom is **about 50 eV**, then softer...a-C:H is produced.... One reason that V_{anode} values must be higher than expected is that there is a particular range of ion energies produced at any given V and that there are low energy, reacted neutral species present as well..." (emphasis added), hence it is apparent from these teachings that by choosing a **particular energy** in a range of energies for the positive ions one produces a-C:H depositions with different hardnesses, i.e. different sp^3 carbon-carbon bond percentages, where these **energy distributions centered** around the

Art Unit: 1762

exemplary 100 eV energies for the deposited carbon atoms, i.e. impact energies, **clearly are promoting** the claimed bond structures and appear to be **sufficiently uniform within the context claimed**, with clear teachings concerning use of energy to achieve different hardness properties, especially considering discussions of using like precursors & like peak energy values as discussed by applicants to produce the hard a-C:H films. Note at taught energies ion implanting mechanisms would have been expected to be involved during the coating process, especially as the thickness of the coating increased.

With respect to the specifically claimed width of the energy distribution being "approximately 5% of a bias voltage", it is noted that average energy is related to their V_{anode} , hence may be considered related to some sort of bias voltage, although the percentage cannot be determined from the given information, but presently as claimed applicants' limitation continue to be not clearly related to the process, thus remains not presently meaningful, since as noted above 5% of something that is not used, cannot ever be determined. With respect to the claim of "a dominant species of carbon ion and a non-dominant species of carbon ion", there will inherently be in any plasma, species that have higher percentages (i.e. can be called dominant species) and those with lower percentages, and at least some or one of the carbon ion species of Baldwin et al.'s plasmas, such as those employing acetylene, would be at or below 5%. Note that the "comprises" language does not limit how many dominate & non-dominant species are present, such that these claims are not considered to distinguish over Baldwin et al.

Applicants' point (page 9 of 6/1/2006 response) about Baldwin et al.'s use of hydrogen to prevent formation of graphite like carbon bonds, is not considered to effect the relevance of the Baldwin et al. reference, because applicants' claims do not exclude the use of hydrogen or the effects thereof taught in Baldwin et al., particularly noting applicants' paragraph [0016], which includes the presence of hydrogen in the ion stream or the deposited coating. Furthermore, Baldwin et al. has input of hydrogen gas into the chamber (not into the ion source) for their use in preventing graphite-like chemical bonds (col. 9, lines

Art Unit: 1762

53-56), thus is not affecting the emissions from the ion stream, hence is neither included nor excluded by applicant's claim language.

While Baldwin et al. does not teach a particular percentage of sp^3 carbon-carbon bonds in their deposits, they do teach that a-C:H deposits contain sp^3 hybridization (col. 1, lines 58-col. 2, line 17, especially 5-10), and means of using the ion energy to effect the hardness, which one of ordinary skill in the art would recognize is affecting the percentage of sp^3 hybridization. Therefore, it would have been obvious to one of ordinary skill in the art to adjust their average ion energy in order to produce the hardness desired for the particular end use, where higher energies that are said to produce the harder films would have been expected to have had higher percentages, where routine experimentation would determine the energy to promote the desired degree of hardness/percentage of sp^3 hybridization, and thus would have been expected to encompass claimed values.

Note that Baldwin et al. teach that deposition rate (col. 5, lines 5-13) varies with distance between source and substrate providing examples above a deposition rate of 2000 Å/min (= 33 Å/sec) at a few centimeters distance with 500 Å/min (≈ 8.3 Å/sec).

As Baldwin et al. provide no spectra, i.e. no Raman spectra, or any other spectra, the examiner cannot directly evaluate whether or not peaks, as in the new claims 29-30 & 39-40, are or would be produced, however as [0102] in the specification appears to indicate that a Raman spectra G-peak is related to the percentage of C-C sp^3 content of the film, it appears that G-peaks in the claimed range of (190- or) 1490-1510 cm^{-1} would have been expected to be present **due to the presence of taught sp^3 hybridization** as discussed above, it including discussions of producing hard a-C:H or DLC films, which necessitate the presence of the bond structures apparently required to create these peaks. The plasmon peak is discussed in the same paragraph, however the examiner cannot determine from the information given, exactly how it relates to density of the deposit, however given the taught DLC & hard a-C:H films deposited, it would appear that they would have been expected to significantly encompass densities,

Art Unit: 1762

which probably, as near as can be determined from the lack of information on the meaning of the plasmon peaks, correspond to plasmon values as claimed.

8. Claims 19, 31-35 & 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin et al. as applied to claims 3-5, 16-17, 20, 23-24, 29-30 & 37-38 above, and further in view of Rabalais et al. (5,374,318, previously discussed in sections 8-11 & 8 of the action mailed 3/29/2005 & 7/21/06, respectively).

While Baldwin et al. discusses desirable hard coating in optical properties of their diamondlike carbon deposits, they do not teach coating on a magnetic recording media, however the previously discussed secondary reference discusses the usefulness of such carbon deposits for optical coatings or protective coatings on magnetic recording media, etc. (col. 1, lines 19-48), thus motivating the specifically claimed enduse as Rabalais et al. shows the desirability of properties as are produced in Baldwin et al. used on such substrates.

9. Lewin et al. (4486286) remains of interest for use of a remote plasma, with a weak magnetic field perpendicular to the beam direction, where the plasma is form from acetylene gas (or other hydrocarbon gases, with preferably high carbon to hydrogen ratios), and where a plasma beam is formed via the use of an anode + grid structure to apparently extract ions, but the teachings therein provide little enlightenment concerning ion energy and ion weight distributions, however it is generally noted that higher energies increase hardness of coating.

10. Claims 7-11, 18 & 21-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 6-15 of copending Application No. 11/463,579 (= 2007/0098980 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other, because while not claimed in the same order or claim, all aspects of the present claims are included in the copending claims of the (579) application, except in present dependent claim 18 directed to deposition rate, which parameter would have been expected to follow

Art Unit: 1762

from the process & be an obvious variation thereof, determinable by routine experimentation. The copending application claims 6+7+13 contain all the limitations of the present independent claims 7, with the additional limitation describing a particular range of diamondlike amorphous structure in the deposit, which is totally encompassed by the present claims, which are of a broader scope, thus inclusive of this narrower scope of the copending claim 6, which may be considered an obvious variation thereof.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

11. Claims 3-4, 17, 23-33, 35 & 37-40 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21-30 of copending Application No. 11/463,577 (2006/0288938 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because these are directed to processes claimed with overlapping scope, where they limitations are presented in different orders, but may be considered obvious variations, providing that one considers that the unclearly claimed limitation concerning the bias voltages relationship to the ion energy would have made it obvious to one of ordinary skill in the art to employ biasing in the presently claimed process. Note that other variations in parameters or results are inclusive of overlapping scopes & determinable via routine experimentation as obvious variations on a theme. Note that while the copending application claims do not specify any particular type of substrate, the preamble limitation of independent claim 31 to deposit on recording media, is so broad as to encompass any material on which information can be recorded, which is essentially any solid material, thus lacking in any particular significance & considered a further obvious variation.

Claims 5, 16 & 20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21-30 of copending Application No. 11/463,577 (2006/0288938 A1), in view of Baldwin et al. (discussed above).

Art Unit: 1762

These dependent claims differ from copending claims of application (577) by requiring the use a particular source material acetylene or specification of particular range of the ion energies, but as seen above both acetylene & energies inclusive of 100 eV are known for use in depositing DLC & hard carbon a-C: H films via analogous ion streams from plasma, hence given these teachings it would have been obvious to one of ordinary skill in the art to employ such source materials and parameters in the process as described in the copending application claims, with the expectation of producing claimed results.

Claims 19 & 34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 21-30 of copending Application No. 11/463,577 (2006/0288938 A1), in view of Rabalais et al. ((318), discussed above).

These claims differ by being specifically directed to magnetic recording media, however as discussed above Rabalais et al. teaches that it is known to deposit films of analogous protective carbon coatings on magnetic recording material, hence it would have been obvious to one of ordinary skill in the art to deposit such films by any effective technique that would not have been expected to be damaging to the underlying substrate, where such techniques would have been expected to encompass processes as described in the copending application (577).

These are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

12. Applicant's arguments filed 6/18/2007 and discussed above have been fully considered but they are not persuasive.

Since the previous office action, applicants have filed continuing cases of the present application, which have included claims of overlapping scope with the present application, thus as this application is still pending, necessitating the above obviousness double patenting rejections. A copending child case corresponding to PGPub 2007/0098979 A1 is also noted, however all its claims are correct to product claims.

Art Unit: 1762

The rejection over Baldwin is not a 1 of two and there were/are (repeated above) many aspects of their teaching that are discussed with respect to how they relate to applicants claim terminology & limitations, in the sentence bridging pages 9-10 of the 6/18/2007 response applicants allege that the examiner has failed to show the presence of substantially uniform will impact energy distribution & substantially uniform white distributions, but half not identified what part of the discussion of Baldwin's teachings they find at odds with their claims. Applicants generally mentioned page 7 of the 7/21/06 action, but as discussion on page 70 it relates to dependent claim limitations discussed thereon, this gives the examiner no useful clues as to what aspect of the reasoning in the rejection applicants object to or consider insufficient.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.


Art Unit: 1762

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

9/2/2007



MARIANNE PADGETT
PRIMARY EXAMINER